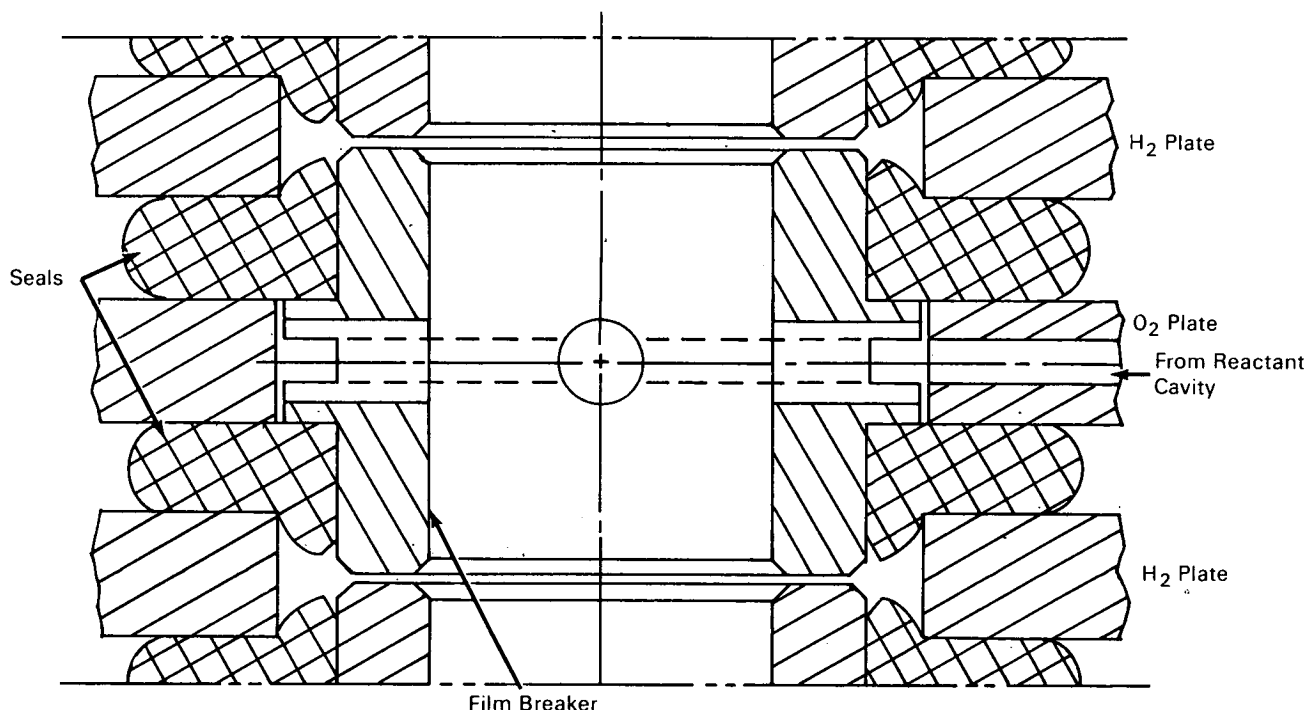


NASA TECH BRIEF



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Film Breakers Prevent Migration of Aqueous Potassium Hydroxide in Fuel Cells



Electrolyte film breakers have been used in fuel cell outlets to minimize purge blockage and loss of electrolyte. Migration of electrolyte into the reactant and water vapor removal outlets of fuel cell plates occasionally causes blockage of outlets because of the electrolytic corrosion. Degradation in cell performance occurs when the cells cannot be adequately purged of accumulated reaction products following blockage of the reactant outlets. The direct loss of electrolyte could lead to decrease in life as well as performance.

The electrolyte film breakers are small "spool like" devices made from polytetrafluoroethylene (TFE). They are installed in the reactant and water vapor removal outlets of each cell and sealed by elastomers. Use of these devices in the water vapor removal cavity outlets prevents loss of KOH solution through film migration during water removal. Gas flow in the restrictor is achieved through the bore and a small orifice (typically .040 - .060 in. in diameter) in the side. The restrictors produce a discontinuity in KOH-H₂O films because of the non-wetting proper-

(continued overleaf)

ties of TFE and the reduced cross section. This innovation may be used in any gaseous-reactant fuel cell.

Note:

This Tech Brief is complete in itself. No additional information is available.

Patent status:

No patent action is contemplated by NASA.

Source: Paul D. Hess of
Allis-Chalmers Manufacturing Co.
under contract to
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